

APPENDIX C

FIRE PREVENTION, CONTROL AND MITIGATION PLAN



Fire Prevention, Control and Mitigation Plan

Covered Aerated Static Pile Composting Operation

Altamont Landfill and Resource Recovery Facility

August 2016

Prepared for:

Waste Management of Alameda County, Inc.
10840 Altamont Pass Road
Livermore, CA 94551

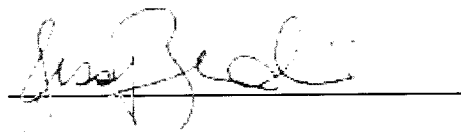
REPORT CERTIFICATION

**Fire Prevention, Control and Mitigation Plan
Covered Aerated Static Pile Composting Operation**

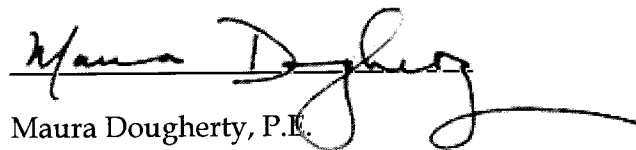
**Altamont Landfill Resource Recovery Facility
Livermore, California**

The material and data in this report were prepared under the supervision and direction of the undersigned.

Cornerstone Environmental Group, LLC



Jessica Bernardini, P.E.
Project Manager



Maura Dougherty, P.E.
Senior Project Manager

TABLE OF CONTENTS

REPORT CERTIFICATION	II
1 INTRODUCTION.....	6
1.1 TERMS OF REFERENCE.....	6
1.2 BACKGROUND.....	6
1.3 PURPOSE AND SCOPE.....	6
1.4 OWNER AND OPERATING	7
1.5 SITE LOCATION AND ACCESS	7
1.6 SITE PLAN	8
1.7 ADJACENT LAND USES	8
2 FIRE PROTECTION PROGRAM.....	9
2.1 REGULATORY FRAMEWORK.....	9
2.2 RESPONSIBILITY.....	9
2.3 FIRE HAZARDS	10
2.4 FIRE EXTINGUISHING EQUIPMENT.....	10
2.5 GOOD HOUSEKEEPING PRACTICES.....	11
2.6 NO SMOKING	11
2.7 TRAINING.....	12
2.8 SPECIAL PROCEDURES FOR CASP COMPOST PILES.....	12
2.9 GENERAL FIRE EMERGENCY PROCEDURES.....	13
2.9.1 SURFACE FIRE	13
2.9.2 INTERNAL PILE FIRE	14
2.10 EVACUATION PLAN	15
2.11 PROTECTION OF PUBLIC HEALTH AND SAFETY, AND ENVIRONMENT.....	16
3 LOCAL FIRE CONTROL AGENCY.....	17
3.1 RESPONSIBILITY.....	17
3.2 SITE ACCESS	17
3.3 CONTROL MEASURES.....	17
3.4 SUBMISSION OF PLAN.....	17
LIMITATIONS.....	18
REFERENCES	19

FIGURES	20
----------------------	-----------

List of Figures

Figures

Figure 1 – Site Location Map

Figure 2 – Typical Site Plan

Figure 3 – Typical Composting and Curing Operations Plan

1 INTRODUCTION

1.1 Terms of Reference

Cornerstone Environmental Group, LLC (Cornerstone) has prepared this Fire Prevention, Control, and Maintenance Plan (FPCMP) for the covered aerated static pile (CASP) composting operation at the Altamont Landfill and Resource Recovery Facility (ALRRF) in Livermore, California (Figure 1), to meet the requirements of Section 17867(a)(9) of Title 14 of the California Code of Regulations (CCR).

This FPCMP describes workplace fire hazards, methods for their control, types of fire protection equipment to be used, and names/job titles of personnel responsible for the control of flammable and combustible fuel source hazards.

1.2 Background

ALRRF is a Class II and III Solid Waste Facility regulated by the Solid Waste Facility Permit (SWFP) issued in 2005 by the Alameda County Environmental Health Department, the Local Enforcement Agency (LEA) for CalRecycle. ALRRF's 2005 SWFP allows the facility to receive and process 11,150 tons per day (tpd) of Class II and Class III wastes.

The planned facility is a CASP compostable materials handling facility with a maximum throughput of 500 tpd of compostable materials. The Draft Initial Study/Mitigated Negative Declaration (IS/MND) for the Altamont Recycling and Composting Facility Conditional Use Permit (CUP) was prepared in accordance with Public Resources Code Section 21000 et seq. and California Environmental Quality Act (CEQA) guidelines Section 15000 et seq. and issued July 11, 2011. The Resolution of the Planning Commission of the County of Alameda approving the IS/MND for proposed CUP PLN2010-00041 (Resolution #13-09) was issued on March 18, 2013.

1.3 Purpose and Scope

Composting has become an important option for managing a variety of organic wastes. Biological oxidation of the readily decomposable compounds converts organic materials to a stable compost. Properly composted organic materials are suitable for use as a soil conditioner and fertilizer to improve plant growth. Composting diverts materials from landfilling and allows for the beneficial reuse of a waste product.

The current proposal for composting operations to a maximum throughput of 500 tpd at ALRRF advances the following objectives:

- Increase diversion and reduce landfilling of wastes;

- Support State and local efforts to work toward “zero-waste”;
- Support Alameda County’s greenwaste (GW) landfill ban, ordinance with an in-county processing solution; and
- Design, construct, and operate a composting facility that minimizes air emissions and other environmental impacts.

1.4 Owner and Operating

The CASP compostable materials handling facility (CMHF) will be owned by Waste Management of Alameda County, Inc. (WMAC), located at:

Waste Management of Alameda County, Inc.
172 98th Avenue
Oakland, CA 94602

and operated at ALRRF, located at:

Altamont Landfill and Resource Recovery Facility
10840 Altamont Pass Road,
Livermore, California 94551
Telephone: (925) 455-7300

The District Manager, based at ALRRF, is responsible for the composting operations and will be the primary contact for regulatory agencies.

ALRRF is owned by WMAC, a subsidiary of USA Waste of California, Inc. (USA Waste).

1.5 Site Location and Access

ALRRF is located in eastern Alameda County, California, approximately 9.6 miles northeast of central Livermore and 13 miles west of central Tracy. ALRRF is just north of U.S. Highway 580. A site location map is presented as Figure 1.

ALRRF is accessed from U.S. Highway 580 via Altamont Pass Road, a two-lane paved road. All traffic enters ALRRF at the same location, through the Main Gate off of Altamont Pass Road. This access area is controlled by locking gates, a Guard House, and video surveillance. The entrance road is a two-lane asphalt-concrete paved surface, one lane for traffic entering the site and one lane for traffic exiting.

Immediately past the Guard House, a right turn leads up to the Gas Plant #1 (landfill gas [LFG] turbines and flare) and Waste Water Facility and a left turn leads to the Administration Buildings Area.

If the main entrance road is followed, it winds approximately $\frac{1}{4}$ mile until there is a right turn to the Maintenance Facility. If this turn is not taken, the road continues to the Scale House, beyond which is the operational area of the landfill. A fork in the road beyond the Scale House divides Fill Area 1 and Fill Area 2. Keeping left at the fork leads to Fill Area 2, keeping right leads to Fill Area 1. The distance of the Scale House from the site entrance would allow for more than 50 transfer trucks to stack up before causing possible traffic nuisance on Altamont Pass Road. Beyond the Scale House the road becomes an unpaved dirt or dirt/gravel road.

The composting operations are proposed to be located as shown on Figure 2, off of the main road north of Fill Area 1.

1.6 Site Plan

The composting operation generally occupies an area north of and adjacent to the Fill Area 1 portion of the landfill site as shown on Figure 2. The landfill property covers approximately 2,064 acres, of which 472 acres are permitted for operations associated with management and disposal of solid waste. Operations associated with the waste management include: disposal of mixed municipal solid waste (MSW) disposal, leachate and stormwater collection and storage, administrative uses, facility operations, maintenance, and levees. Approximately 990 acres of the property are reserved for an environmental conservation easement area.

Figure 3 shows the general layout of the composting operations including the composting pad, curing piles area, and compost contact water impoundment.

1.7 Adjacent Land Uses

ALRRF is located in a sparsely populated area. ALRRF lies within an area zoned as "A" District and is primarily used for agricultural purposes (public utility and sanitary landfill uses are granted within this designation through the issuance of a CUP). Adjacent land uses include dry-land farming, cattle grazing, and power-producing windmills. Subsidiaries of FPL Energy, Inc., lease portions of the ALRRF property for the installation and operation of power-producing windmills. The general area of ALRRF is designated in the Alameda County General Plan [1994] as Agricultural/Open Space (Open Space Element) and as Large Parcel Agriculture (East County Area Plan).

2 FIRE PROTECTION PROGRAM

2.1 Regulatory Framework

Title 14, Chapter 3.1, Article 6, Section 17867(a)(9) of the CCR requires that *"The operator shall provide fire prevention, protection and control measures, including, but not limited to, temperature monitoring of windrows and piles, adequate water supply for fire suppression, and the isolation of potential ignition sources from combustible materials. Fire lanes shall be provided to allow fire control equipment access to all operation areas."*

The following sections will address the minimum requirements outlined in the CCR Section 17867(a)(9).

For further detail regarding the site wide fire protection plan, see the "Emergency Management and Contingency Plan" for ALRRF dated December 2013.

2.2 Responsibility

The program administrator responsible for the fire prevention, control and protection programs is the Operations Manager.

The administrator shall:

- Oversee the entire program;
- Ensure all fire extinguishing equipment is in proper operating condition; and
- Ensure employee training is conducted.

The employees are responsible for the control of fuel source hazards in their work areas. Fuel source hazards at the composting operation include, but are not limited to, the following:

- Electrical ignition source from downed powerlines;
- Gasoline or diesel; and
- Piles of paper, wood, greenwaste, etc.

All site personnel are to be trained in good fire prevention and housekeeping techniques in order to reduce the fire starting potential. Site personnel should also be familiar with basic fire control procedures and use of fire extinguishers.

All gas-powered tools and internal combustion equipment must be equipped with spark arresters and must be maintained in an effective manner. Turbo-charged equipment is exempted.

All fire extinguishers, fire hoses, and fire pumps should be periodically inspected or tested, maintained in effective working order, and all personnel should be familiar with their locations and use.

2.3 Fire Hazards

The main potential fire hazard within the ALRRF composting operations are large, dry, composting piles (active, curing, or a pile of overs screened out of the finished product). Water seeping into the dry compost can restart microbial activity and initiate reheating. A "macropore" or crack from the hot spot within the pile to the surface often develops into a vent or chimney. Air movement up through this vent draws more oxygen into the hot spot where heat is being generated, rapidly escalating the transition from a biological fire to smoke.

Surface fires (fires which start and spread on the exterior surface of materials and remain exposed) are another hazard. Surface fires could potentially be started by lightning strikes, sparks from welding equipment, sparks or heat from operating equipment which ignite oil or dust particles, and wildfire.

2.4 Fire Extinguishing Equipment

Fire extinguishers are located within the cabs of material handling equipment (front loaders, dozers, conveyers, etc.). They are maintained, located and identified making them readily accessible to employees without subjecting the employee to possible injury.

As part of maintaining good control of the composting process and demonstration of pathogen reduction, ALRRF monitors the temperature of the compost piles in addition to other key parameters. If allowable temperatures of the CASP piles are exceeded, moisture is added to maintain good composting conditions well before unsafe temperatures are reached. The design of the composting operation includes appropriately designed fire lanes, which allow access of fire control equipment to operational areas.

A fire that occurs at the composting operations may be extinguished by the ALRRF trained personnel and/or the Alameda County Fire Department. Ample water supplies and equipment are available for fire suppression including: the compost contact water pond, the site stormwater pond, and numerous diesel and electric pumps and water trucks.

2.5 Good Housekeeping Practices

Good housekeeping is a vital part of fire prevention. Each and every employee is responsible for keeping his or her work area clean. The following points are emphasized:

- Avoid accumulating combustible materials;
- Keep all flammable and combustible materials away from ignition sources;
- Keep all exit paths clear;
- Promptly and properly clean-up spills and leaks of material and notify supervisor;
- Remove all trash and waste at the end of each shift, and place it in the appropriate waste receptacle;
- Keep all oily rags in a designated waste receptacles;
- Keep all flammables in a flammable storage cabinet at least 30 feet from sources of ignition;
- Assure adequate aeration of the pile to release heat and increase evaporation of water, a heat absorbing process. Ventilation can be achieved by mechanical aeration, or turning the pile should electricity not be available to provide aeration. Ventilation can also be improved by constructing narrower, shallower windrows or piles;
- Avoid active pile depths greater than approximately 15 feet, and monitor for vents in deep piles. Use these vents to monitor internal pile temperatures if they develop;
- Visually inspect the piles to look for signs of hot spots. Indicators include evidence of vents, fissures, wet spots, and fissures of steam; and
- Locate the hot spot before it turns into a fire. Seek out the hottest spot in the pile during routine temperature monitoring in the active piles. If there is a suspected hotspot in a curing pile, utilize a temperature probe to monitor and identify suspected hot spot.

2.6 No Smoking

A "No Smoking" policy is instituted where flammable and combustible liquids are used and/or stored. These areas are posted "No Smoking". Employees are instructed as to the reasons for the prohibitions.

Smoking is Prohibited, Except in Designated Areas

2.7 Training

Training for this fire prevention program is conducted at the following times:

- At employee's time of hire, or transfer to a new area, and annually thereafter;
- When there have been revisions or additions to the program;
- If any employee demonstrates that he/she may need re-training; and
- Training on the use of fire extinguishers is provided annually for employees who are designated to use fire extinguishers.

2.8 Special Procedures for CASP Compost Piles

Best Management Practices (BMPs) for the prevention of fires in compost piles include:

- Providing sufficient space to avoid exceeding the fire-safe height of piles (approximately 15 feet for active piles and 18 feet for curing piles);
- Providing access to piles for firefighting equipment (15 feet wide lanes minimum along ends of pile rows);
- Providing access to adequate supply of water;
- Providing space to spread piles out;
- Monitoring internal temperature of piles during the active phase (fire potential if greater than 160°F for over six hours);
- A minimum of two loaders should be available for use in moving and spreading out stored material for firefighting; and
- Piles should be ventilated by reducing the pile size if storage pile temperatures reach greater than 160°F for six hours and after investigating fire potential is deemed possible.

As shown on Figure 3, the compost receiving and processing area at ALRRF is located on the northwest side of the landfill. An estimated area of approximately 38 acres is available for storage of compost-related materials. Additional acres on the landfill will be added as necessary for finished compost. Based on approximate dimensions of curing piles and finished product piles, there is a potential storage capacity for more than one year's worth of inbound materials, approximately 156,000 tons, at ALRRF.

Both the unprocessed and processed feedstock are stored in stockpiles estimated to be approximately 12 feet high. The 12 feet height is based on the approximate maximum reach of loading equipment, however if other equipment is utilized then pile heights could be constructed as high as 15 feet. At the ends of pile groupings, a minimum 15 feet wide fire

lane exists allowing for access to the piles. As described in Section 2.3, various sources of water and fire extinguishing equipment are located throughout the site. In addition, earthmoving equipment, such as dozers and loaders, are also available at the site.

The active composting piles are instrumented with automated temperature probes for monitoring the temperature throughout the composting process, with at least one sensor to every approximately 200 cubic yards (cy) of compost, in accordance with the CCR, Title 14, Chapter 3.1, Article 7, Section 17868.3(c)(1). Based on monitoring and operational protocol, the aeration system is activated to induce airflows through the active piles. The aeration timing and flow rates are varied as needed to optimize the composting process, minimize odors, and prevent potential subsurface fires. Additional measures include ventilating the pile to decrease the internal temperature by turning the compost stockpiles and spraying with a sprinkler.

2.9 General Fire Emergency Procedures

The general fire emergency procedures detailed below will be implemented when there is a fire that is not immediately contained and extinguished or too large to handle. The site fire control approach is based on leaving firefighting to the fire department with support from trained ALRRF employees.

2.9.1 Surface Fire

Surface fires are typically accessible fires for which the traditional approach of applying water or chemicals typically is effective in containing and extinguishing the fire.

1. If a fire develops landfill personnel are equipped and trained to extinguish it. The site has immediate access to heavy equipment for fire breaks and burials, soil stock piles and water trucks. All materials handling heavy equipment have onboard fire suppression systems and hand held fire extinguishers.
2. Fire protection for site equipment is provided by frequent inspection and removal of debris and dust from under carriages and engine compartments. Regular maintenance includes inspections for oil and fuel leaks. There are portable fire extinguishers on all vehicles and heavy equipment. Fire extinguishers are also kept at the maintenance building, the administration buildings, and the waste water facility.
3. Small fires located at the site will be extinguished by site personnel using materials and equipment as noted above by the following procedure:
 - A. Approach from the upwind side of the area affected by fire.
 - B. Extinguish the fire with a portable fire extinguisher or with water from the water truck and with dirt pushed by the front loaders.

- C. Proceed with caution, such that heavy equipment does not become trapped or stuck in loose refuse.
- D. Use water sensibly. A fine spray is generally as effective as a heavy stream and does not empty the truck as quickly.
- E. No heavy equipment is to approach a fire unless supported by a water truck. When the water truck becomes empty, the heavy equipment must back away from the fire until more water is available.
- F. If two water trucks are available, shuttle water trucks back and forth such that one is filling while the other is in use.

If the fire is assessed to be too large to handle, the ALRRF will immediately call 911 and notify the Fire Department for emergency response. Fire department connections are located near the Maintenance Facility, Administration Buildings, and the Gas Plant.

2.9.2 Internal Pile Fire

Fires may start internally to the pile due to a series of reactions which progressively increase the temperature of the composting materials until the ignition point is reached.

- 1. If a fire develops landfill personnel are equipped and trained to extinguish it. The site has immediate access to heavy equipment for fire breaks and burials, soil stock piles and water trucks. All materials handling heavy equipment have onboard fire suppression systems and hand held fire extinguishers.
- 2. Fire protection for site equipment is provided by frequent inspection and removal of debris and dust from under carriages and engine compartments. Regular maintenance includes inspections for oil and fuel leaks. There are portable fire extinguishers on all vehicles and heavy equipment. Fire extinguishers are also kept at the maintenance building, the administration buildings, and the waste water facility.
- 3. Small fires located at the site will be extinguished by site personnel using materials and equipment as noted above by the following procedure:
 - A. Do not walk on piles or assume the extent of the fire is known. Pile fires can be much more widespread than surface smoke indicates;
 - B. Shut down the aeration system;
 - C. Carefully use a large wheel loader to open up the pile;
 - D. A fire hose or water trucks should be available as the loader removes material to spray directly onto burning embers;
 - E. Continue to break the pile up and drench the materials as they are removed and spread on the ground or stacked in small piles with water.

If the fire is assessed to be too large to handle, the ALRRF will immediately call 911 and notify the Fire Department for emergency response. Fire department connections are located near the Maintenance Facility, Administration Buildings, and the Gas Plant.

2.10 Evacuation Plan

In the event the fire is not immediately contained and extinguished, or is too large to handle, implement the following procedures:

1. NOTIFY THE FIRE DEPARTMENT

- A. Call 911 (cell phone) or 9-911 (site phones) and inform the dispatcher of the site address, location of the fire, type of fire, and whether it is likely to spread out of the immediate area;
- B. Follow all fire department instructions;
- C. One person should be at the Main Gate to direct the fire trucks and other traffic (generally the Administration Facility Roll Caller); and
- D. One person should take charge near the location of the fire to direct fire trucks & direct traffic flow to maintain free and unimpeded access to the fire.

2. IMMEDIATELY NOTIFY OTHERS & EVACUATE THE AREA

- A. Notify anyone in the immediate area and contact a Supervisor or Manager;
- B. The Supervisor or Manager should contact the Site-Wide Emergency Coordinator and the Facility Emergency Coordinator; and
- C. Evacuate the area.

3. SITE-WIDE EMERGENCY COORDINATOR ACTIONS

- A. The Site-Wide Emergency Coordinator should get the information needed to evaluate the situation: size & location, amount of smoke, whether or not controlled by sprinklers;
- B. The first person or persons who notice the fire are to report it to the Landfill Supervisor, Landfill Operations Manager, District Manager and Fire Department;
- C. Never assume that someone else will report the fire;
- D. Employees should not evacuate unless they are in personal danger or have been advised to leave by Management and/or Fire/Police Department;
- E. Employees should not attempt to extinguish the fire if their own or someone else's safety is in danger;

- F. If possible, remove all vehicles from the site of the fire.

2.11 Protection of Public Health and Safety, and Environment

Visitors to ALRRF are required to log in at the administration building upon arrival and to wear appropriate safety gear when onsite. In the case of fire, employees will direct visitors to the correct emergency exits.

Numerous environmental control and monitoring measures, which are overseen by various regulatory agencies, are in place at the site. In the event of a fire, these agencies will be notified regarding potential environmental issues and appropriate mitigation and response measures as needed. Notification could include items such as runoff from chemical firefighting retardants or air emissions from the burning product.

3 LOCAL FIRE CONTROL AGENCY

3.1 Responsibility

The Alameda County Fire Department responds to any fire emergencies at the site. The nearest fire station is Fire Station #20 located at 323, Livermore, CA, 94550. It is located just over seven miles from the site.

3.2 Site Access

Access to the site is via Altamont Pass Road and through the main entrance facilities and Scale House (Figure 2). The main access roads on site are depicted on Figure 2. Gate keys have been provided to the Fire Department to allow access to the site. All portions of the facility are within 150 feet of an engineered road, with access through the composting operation available by gravel pad.

3.3 Control Measures

The Fire Department performs inspections of ALRRF and reviews the location of firefighting equipment, such as water and fire extinguishers. Fire water tanks are equipped with valves and locks that are compatible with the Fire Department's equipment and keys. Site personnel would be available to assist the Fire Department, if necessary, by using water trucks and earth-moving equipment to suppress the fire.

3.4 Submission of Plan

This FPCMP for the composting facility will be submitted to the Fire Department for their review. Review comments from the Fire Department will be discussed and incorporated, as necessary.

LIMITATIONS

This FPCMP has been prepared for the exclusive use of ALRRF for specific application to the projected construction and operation of a composting facility at the Site. The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others or the use of segregated portions of this report.

REFERENCES

Alameda County Environmental Health Office of Solid/Medical Waste Management, 2005. Solid Waste Facility Permit, 01-AA-0009, Altamont Landfill and Resource Recovery Facility, Livermore, California. August 25.

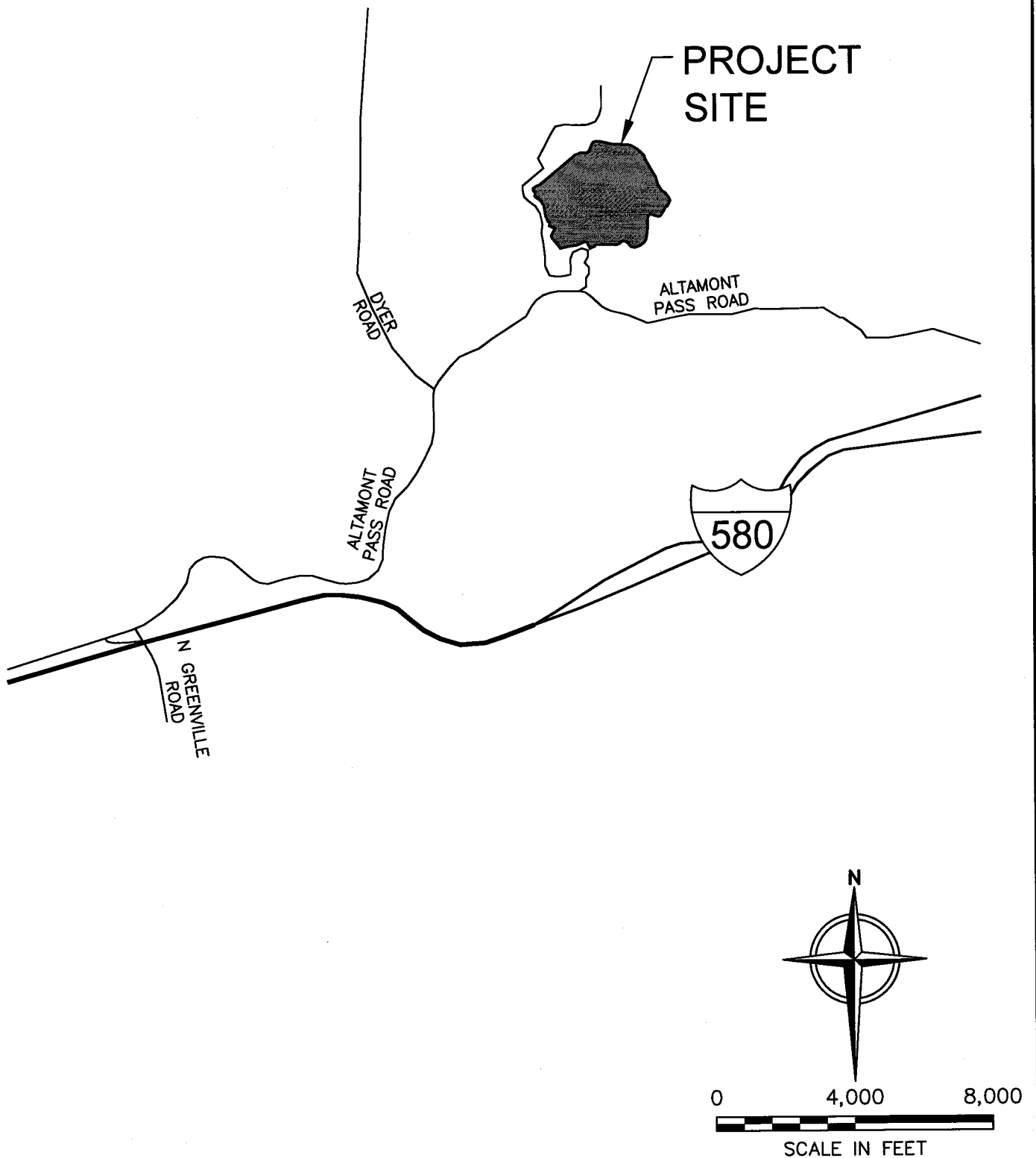
California Code of Regulations (CCR). Title 14, Natural Resources, Division 7, Chapter 3.1 Compostable Materials Handling Operations and Facilities Regulatory Requirements, Article 6 Composting Operating Standards.

CCR. Title 14, Natural Resources, Division 7, Chapter 3.1 Compostable Materials Handling Operations and Facilities Regulatory Requirements, Article 7 Environmental Health Standards.

Cornerstone Environmental Group, LLC., "Report of Composting Site Information, Altamont Landfill Resource Recovery Facility, Livermore, CA," August 2016.

Waste Management, 2013. Emergency Management and Contingency Plan for Altamont Landfill and Resource Recovery Facility. December.

Figures



cornerstone
environmental

PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

This drawing represents intellectual property of Cornerstone Environmental Group LLC. Any modification to the original by other than Cornerstone Environmental Group LLC represents violation of original purpose and as such is considered void. Cornerstone Environmental Group LLC will not be held liable for any changes made to this document without express written consent of the originator.

ALTAMONT LANDFILL
REPORT OF COMPOSTING INFORMATION

SITE LOCATION MAP

FIGURE

1

PROJECT NO.
140515

